(nondeterministic assignment) Generalize the assignment notation $x := e$ to allow the expression $e$ to be a bunch, with the meaning that $x$ is assigned an arbitrary element of the bunch. For example, $x := \text{nat}$ assigns $x$ an arbitrary natural number. Show the standard binary notation for this form of assignment. Show what happens to the Substitution Law.

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$x := e \equiv x' : e \land y' = y \land \ldots$

$x := e \cdot P$

$\equiv \exists x'', y'', \ldots \ (x'' : e \land y'' = y \land \ldots) \land (\text{substitute } x'', y'', \ldots \text{ for } x, y, \ldots \text{ in } P)$

$\equiv \exists x'' : x'' : e \land (\text{substitute } x'' \text{ for } x \text{ in } P)$

but the one-point law does not allow us to get rid of $\exists x''$. For example, in one variable, we should have

$x := 0, 1. \ x' = x + x$

$\equiv \ x' = 0, 2$

but the Substitution Law would give

$\equiv \ x' = (0, 1) + (0, 1)$

$\equiv \ x' = 0, 1, 2$